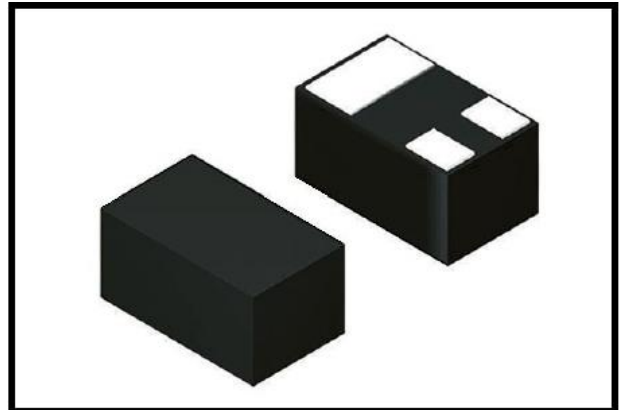


PTUC0513NT-ESD Protection Diode

Feature

- 110 Watts peak pulse power (8/20 μ s)
- Unidirectional configuration
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance ($C_j = 1.2$ pF typ.)
- Protect one data/power line
- IEC61000-4-2 (ESD) ± 20 kV (Air), ± 18 kV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning): 7 A (8/20 μ s)



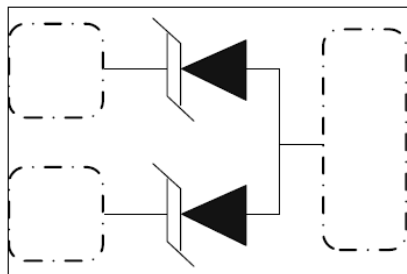
Applications

- Cell Phone Handsets and Accessories
- Micro processor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops and Servers
- Portable Instrumentation

Mechanical Data

- DFN1006-3L package
- Molding compound flammability rating: UL94 V-0
- Tape and Reel Packaging
- RoHS/WEEE Compliant
- Moisture Sensitivity Level: Level1

Schematic and PIN Configuration



DFN1006-3L

Maximum Rating

Parameter	Symbol	Limit	Unit
IEC61000-4-2 ESD Voltage – Air Mode	$V_{ESD}^{(1)}$	± 20	kV
IEC61000-4-2 ESD Voltage – Contact Mode		± 18	
Peak Pulse Power	$P_{PP}^{(2)}$	110	W
Peak Pulse Current	$I_{PP}^{(2)}$	7	A
Maximum Lead Solder Temperature (10 seconds duration)	T_L	260	$^{\circ}$ C
Junction Temperature	T_J	-55~125	$^{\circ}$ C
Storage Temperature Range	T_{stg}	-55~125	$^{\circ}$ C

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 μ s exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of $T_A = 25^{\circ}$ C unless otherwise noted.

PTUC0513NT-ESD Protection Diode

Electrical Characteristics

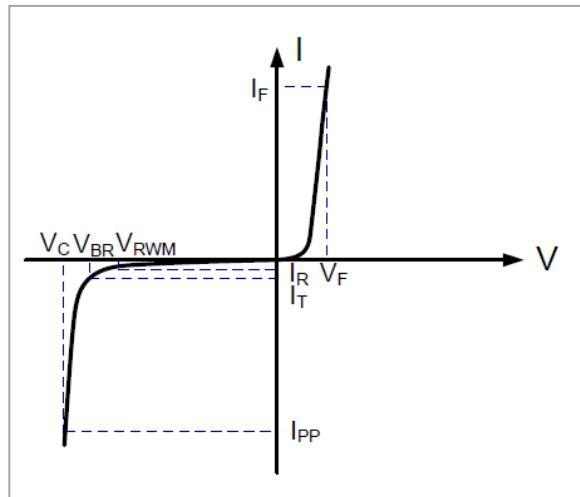
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$			0.5	μA
Peak Pulse Current	I_{PP}				7.0	A
Clamping Voltage	$V_C^{(2)}$	$I_{PP} = 7\text{A}$		16		V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		1.2		pF

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of $T_A = 25^\circ\text{C}$ unless otherwise noted.

Electrical Parameters

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Stand-off Voltage
V_F	Forward Voltage @ I_F



PTUC0513NT-ESD Protection Diode

Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

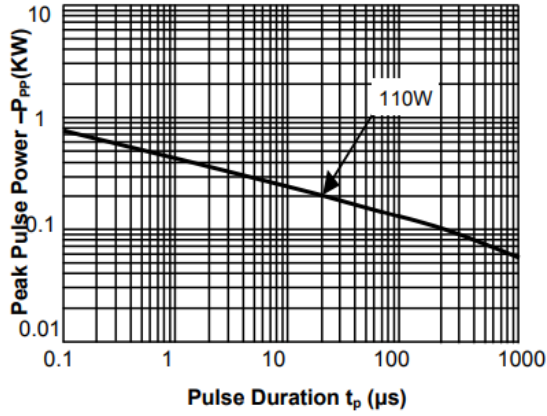


Fig.2 Pulse Derating Curve

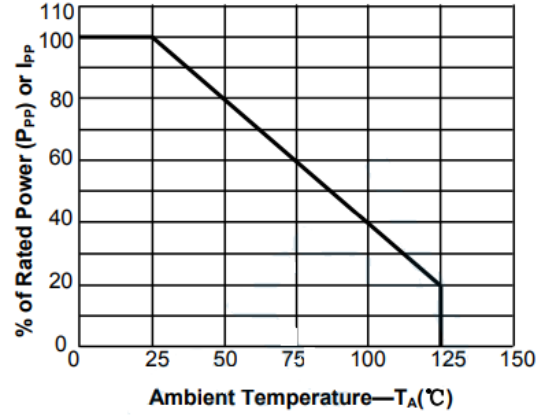


Fig.3 Pulse Waveform-8/20μs

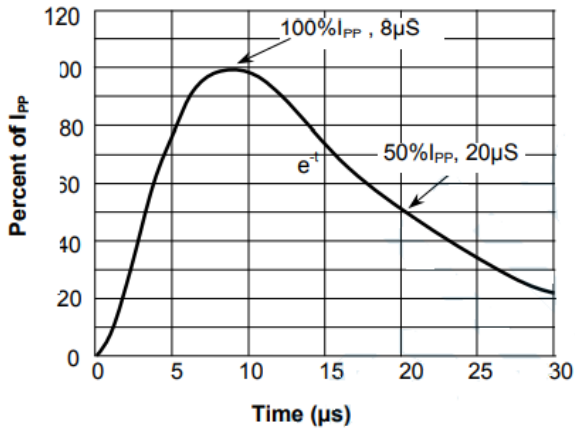
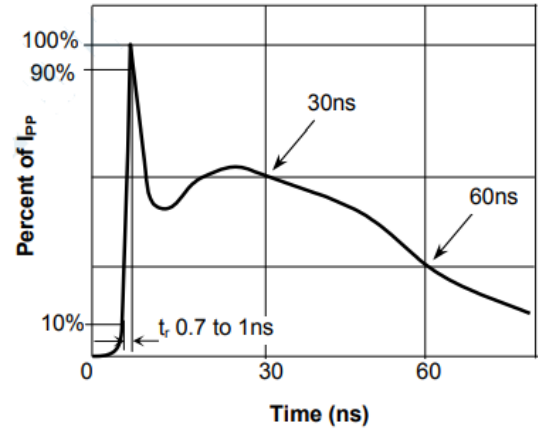
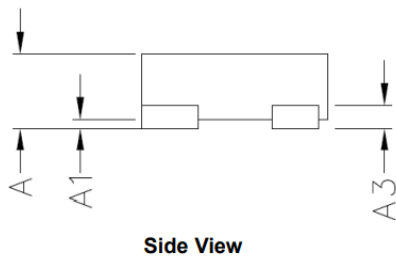
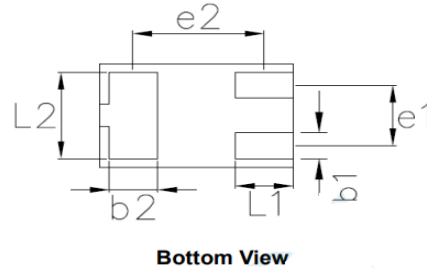
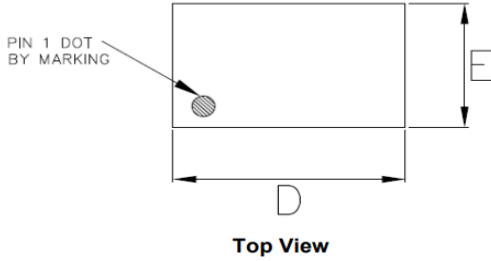


Fig.4 Pulse Waveform-ESD(IEC61000-4-2)



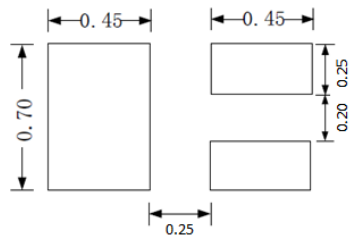
PTUC0513NT-ESD Protection Diode

DFN1006-3L Package Outline Dimensions



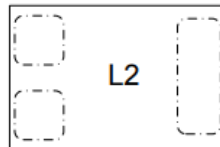
Symbol	Dimensions (mm)		
	Min	Typ	Max
A	0.40	-	0.50
A1	0.00	-	0.05
A3	0.125 REF		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b 1	0.10	0.15	0.20
b 2	0.20	0.25	0.30
L1	0.20	0.30	0.40
L2	0.40	0.50	0.60
e 1	0.350 BSC		
e 2	0.675 BSC		

Recommended Pad Layout



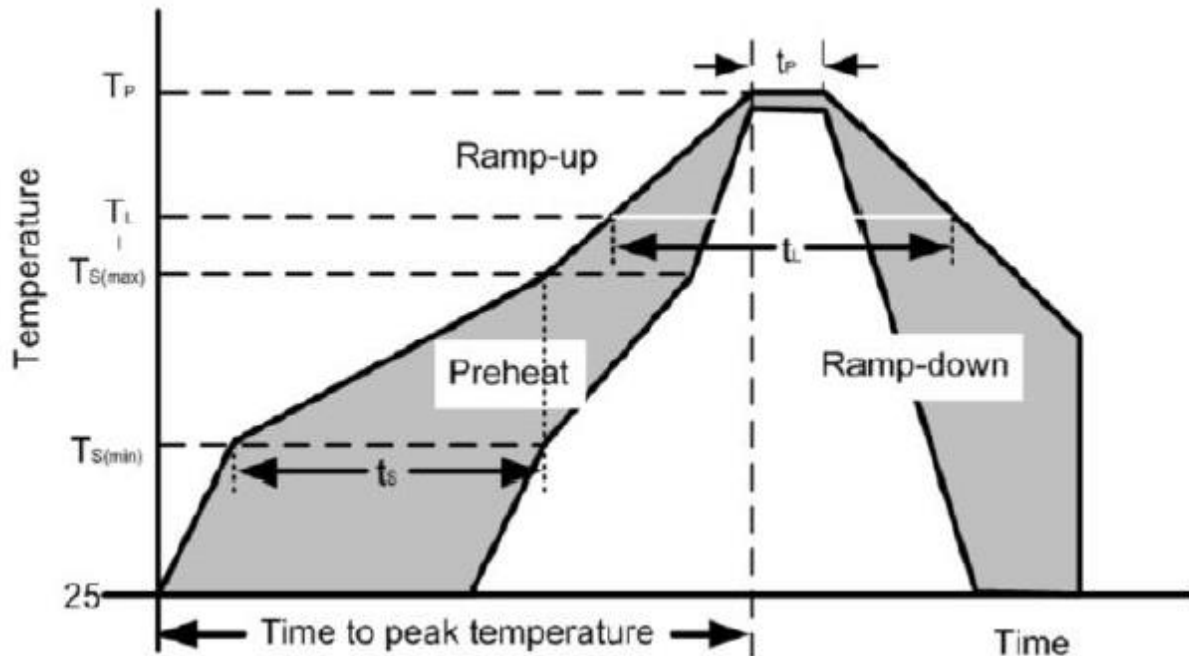
- Note:
1. Controlling dimensions in millimeters
 2. The pad layout is for reference purpose only

Marking



PTUC0513NT-ESD Protection Diode

Soldering Parameters



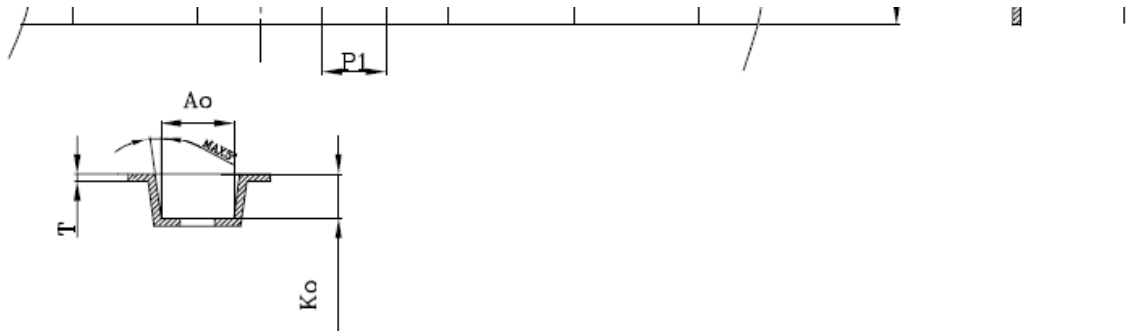
Reflow Condition	Pb-Free assembly
Pre Heat Temperature Min (Ts (min)) 150°C	Temperature Min (Ts (min)) 150°C
Pre Heat Temperature Min (Ts (max)) 200°C	Temperature Min (Ts (max)) 200°C
Pre Heat Time (min to max) (ts) 60-190 secs	Time (min to max) (ts) 60-190 secs
Average ramp up rate (Liquidus Temp) (TL) to peak	5°C/seconds max
Ts(max)to TL—Ramp-up Rate	5°C/seconds max
Reflow Temperature (TL) (Liquidus)	217°C
Reflow Temperature (tl)	60-150 seconds
Peak Temperature (Tp)	260+0/-5°C
Time within actual peak Temperature (tp)	20-40 seconds
Ramp-down Rate	5°C/seconds max
Time 25°C to peak Temperature (Tp)	8 minutes Max.
Do not exceed	280°C

PTUC0513NT-ESD Protection Diode

Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PTUC0513NT	DFN1006-3	7 inch	10,000

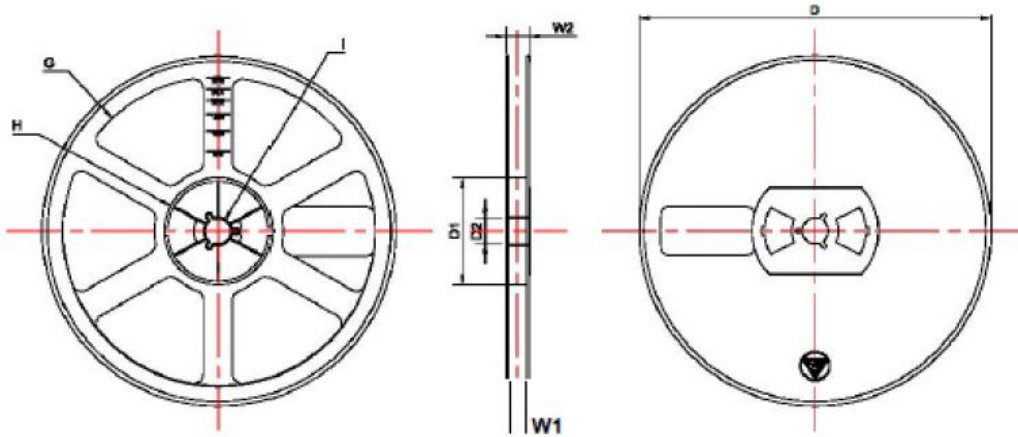
SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	0.69±0.05	1.19±0.05	0.66±0.05	4.00±0.1	2.00±0.05	2.00±0.05
SYMBOL	T	E	F	D0	D1	W
SPEC	0.20±0.02	1.75±0.1	3.50±0.05	1.55±0.05	0.50±0.1	8.00±0.1



Carrier Tape	DFN1006 (mm)	Tolerance
A0	0.69	±0.05
B0	1.19	±0.05
K0	0.66	±0.05
P0	4.00	±0.1
P1	2.00	±0.05
P2	2.00	±0.05
T	0.20	±0.02
E	1.75	±0.1
F	3.50	±0.05
D0	1.55	±0.05
D1	0.50	±0.1
W	8.00	±0.1

PTUC0513NT-ESD Protection Diode

DFN1006 Reel



Reel Option	7" dia (mm)	Tolerance
D	Ø178.00	±2
D1	54.40	±1
D2	13.00	±1
G	R78.00	±1
H	R25.60	±1
I	R6.50	±1
W1	9.50	±1
W2	12.30	±1